Broadcom 10Gb 2-Port and 4-Port Ethernet Expansion Cards (CFFh) for IBM BladeCenter

IBM BladeCenter at-a-glance guide

IBM is committed to offering both function and flexibility to our clients through our products. IBM BladeCenter was the first to offer end-to-end 10Gb Ethernet in a blade server configuration, and these expansion cards are part of that offering. IBM offers two versions of the card, a 2-port and a 4-port, providing greater flexibility to the clients. Both of these cards are based on the proven Broadcom 57710 module and will work seamlessly with all current and future 10Gb Ethernet Switch Modules.

Figure 1 shows the Broadcom 10Gb 2-port Ethernet Expansion Card (CFFh). The 4-port card has a second Broadcom module under the heatsink and is almost identical.

Figure 1. Broadcom 10Gb 2-port Ethernet Expansion Card (CFFh)

Did you know?

Installing a Broadcom 10Gb 4-Port Ethernet Expansion Card to every blade server in a BladeCenter H chassis, plus the addition of four High-Speed I/O Modules, allows up to 40 Gbps of Ethernet bandwidth to every server in the chassis. This has the potential of meeting even the most bandwidth-intensive application needs such as virtualization.

The adapter connects to the midplane directly, without having to use cables or SFP modules. By eliminating these components for up to 14 servers, the resulting savings alone cover the BladeCenter chassis investment.

Part number information

Table 1. Ordering part number and feature code

Description	Part number	Feature code
Broadcom 10Gb 2-port Ethernet Expansion Card (CFFh) for IBM BladeCenter	44W4466	5489
Broadcom 10Gb 4-port Ethernet Expansion Card (CFFh) for IBM BladeCenter	44W4465	5479

These part numbers include the following items:

- One 2-port card (part number 44W4466) or one 4-port card (part number 44W4465)
- Documentation CD
- Safety Notices publication

Features

The expansion card has the following features and benefits:

- Offers an end-to-end solution up to 10Gb
- Based on the Broadcom 57710 module
- One (two-port card) or two (four-port card) PCI Express x8 host interfaces
- Connectivity to high-speed I/O module bays in BladeCenter H and BladeCenter HT chassis
- Enables two or four 10Gb ports from the blade server to the external network
- Supports failover
- Supports IBM BladeCenter Open Fabric Manager
- Supports iSCSI BladeBoot
- Supports Wake-on-LAN
- Support for SOL and cKVM over the high-speed network after upgrading to the firmware level above v2.1.0a

Performance features:

- TCP offload engine (TOE)
- Full fast-path TCP offload
- TCP/IP checksum offload
- TCP/IP segmentation offload

The expansion card has the following specifications:

- BladeCenter form factor: CFFh
- Host data transfer: PCI Express 1.1
  - One x8 interface for the two-port card
  - Two x8 interfaces for the four-port card
- Operating power: Less than 15 watts
- Communication module: Broadcom BCM57710 (2-port) or BCM57710s (4-port)

Operating environment

This is supported in the following environment:

- Temperature: 10 to 35 °C (50 to 95 °F)
- Relative humidity: 8% to 80% (non-condensing)

Supported servers

The Broadcom 10Gb 2-Port and 4-Port Ethernet Expansion Cards (CFFh) are supported in the IBM BladeCenter servers listed in Table 2.

Table 2. Supported servers

Expansion card	Part number	HS12	HS21	HS21 XM	HS22	LS21	LS22	LS41	LS42	JS12	JS21	JS22	JS23/JS43
Broadcom 10Gb 2-port Ethernet Expansion Card (CFFh)	44W4466	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
Broadcom 10Gb 4-port Ethernet Expansion Card (CFFh)	44W4465	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N

Figure 2 shows where the CFFh card is installed in a BladeCenter server.

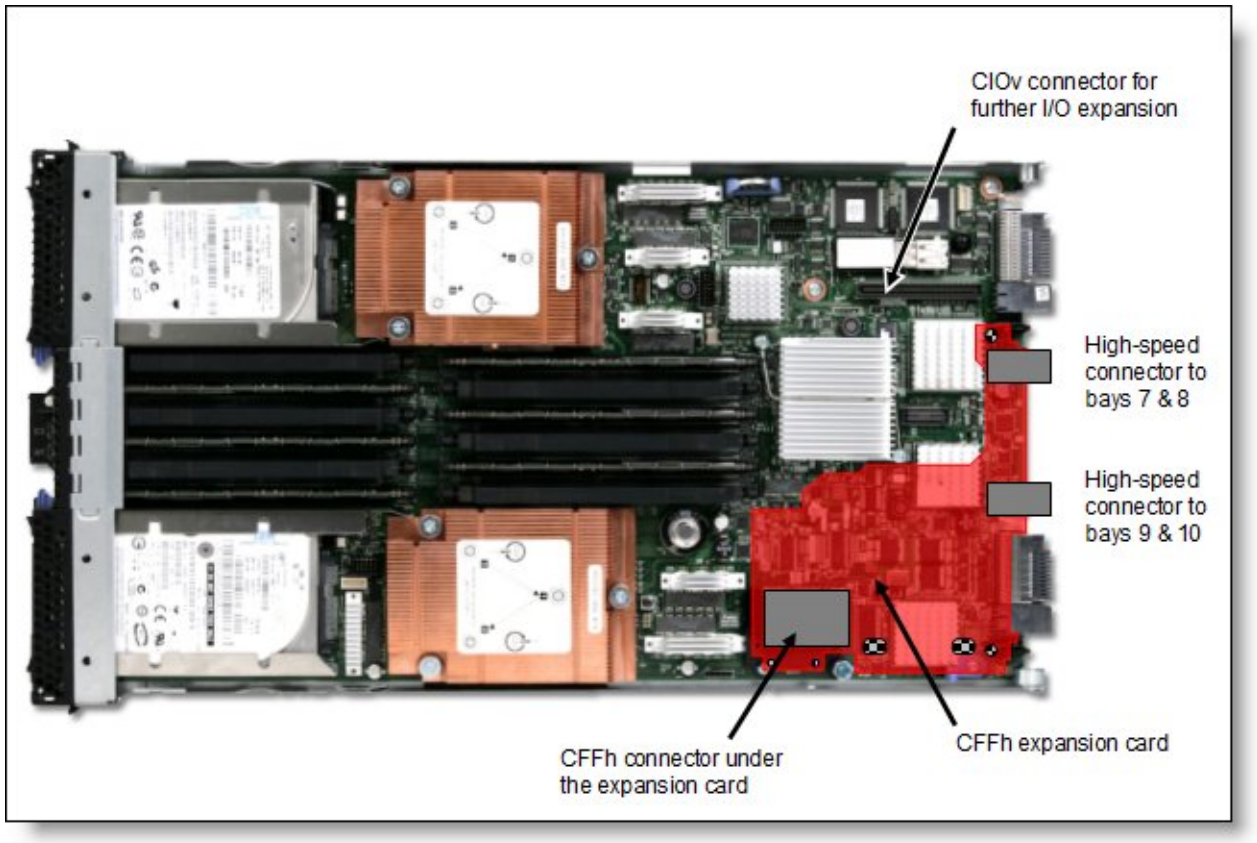
CIOv connector for further I/O expansion
High-speed connector to bays 7 & 8
High-speed connector to bays 9 & 10
CFFh connector under the expansion card
CFFh expansion card

Figure 2. Location on the BladeCenter server planar where the CFFh card is installed

IBM BladeCenter chassis support is based on the blade server type in which the expansion card is installed. Consult ServerProven to see which chassis each blade server type is supported in: http://ibm.com/servers/eserver/serverproven/compat/us/.

Supported I/O modules

The I/O modules that can be used to connect to the Broadcom 10Gb 2-Port and 4-Port Ethernet Expansion Cards (CFFh) are listed in Table 3.

Table 3. I/O modules supported with the Broadcom 10Gb 2-Port and 4-Port Ethernet Expansion Cards

I/O module	Part number	BladeCenter S	BladeCenter E	BladeCenter H	BladeCenter T	BladeCenter HT	MSIM	MSIM-HT
BNT 6-port 10Gb High Speed Switch Module	39Y9267	N	N	Y	N	Y	N	N
10Gb Ethernet Pass-Thru Module for IBM BladeCenter	46M6181	N	N	Y	N	Y	N	N
BNT Virtual Fabric 10Gb Switch Module	46C7191	N	N	Y	N	Y	N	N
Cisco Nexus 4001I Switch Module	46M6071	N	N	Y	N	Y	N	N

The I/O module listed in Table 3 is supported in BladeCenter H and BladeCenter HT chassis only.

In BladeCenter H, the ports of CFFh cards are routed through the midplane to I/O bays 7, 8, 9, and 10, as shown in Figure 3. The BladeCenter HT is similar in that the CFFh cards are also routed through the midplane to I/O bays 7, 8, 9, and 10.

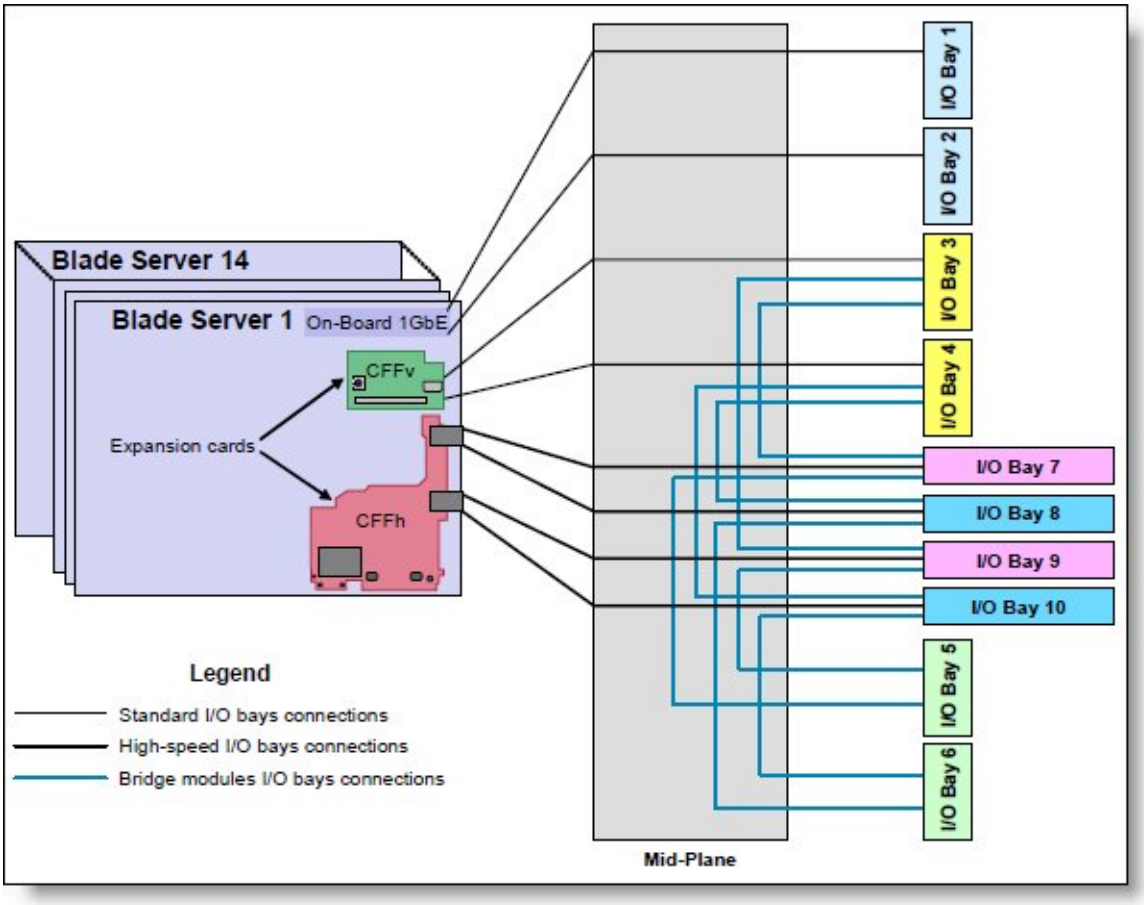

Figure 3. IBM BladeCenter H I/O topology showing the I/O paths from CFFh expansion cards

One I/O module must be installed in the chassis for each Ethernet port that you wish to use on the expansion card. The specific I/O bays in the chassis are listed in Table 4.

- For the Broadcom 10Gb 2-port Ethernet Expansion Card (CFFh), you must install an I/O module in I/O bays 7 and 9 (that is, two I/O modules).
- For the Broadcom 10Gb 4-port Ethernet Expansion Card (CFFh), you must install an I/O module in I/O bays 7, 8, 9, and 10 (that is, four I/O modules).

Table 4. Locations of I/O modules required to connect to the expansion card

Expansion card	I/O bay 7	I/O bay 8	I/O bay 9	I/O bay 10
Broadcom 10Gb 2-port Ethernet Expansion Card (CFFh)	Supported I/O module	Not used	Supported I/O module	Not used
Broadcom 10Gb 4-port Ethernet Expansion Card (CFFh)	Supported I/O module	Supported I/O module	Supported I/O module	Supported I/O module

Wake-on-LAN support

Wake-on-LAN (WOL) is supported on all servers listed in Table 2, with the exception of:

- BladeCenter HS21
- BladeCenter HS21 XM

In addition, when used with the four-port card, WOL is only supported with the switch modules in bays 7 and 9 only. WOL is not supported with bays 8 and 10.

Popular configurations

Figure 4 shows a configuration using the Broadcom 10Gb 4-port Ethernet Expansion Card (CFFh). This solution enables four 10Gbps Ethernet connections from each blade server.

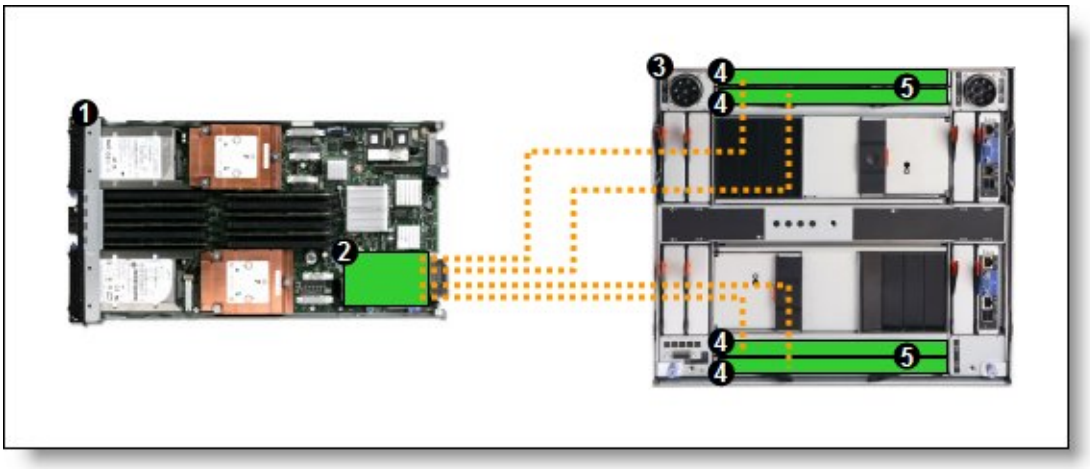

Figure 4. 40 Gb solution using the Broadcom 10Gb 4-port Ethernet Expansion Card (CFFh)

The components used in this configuration are listed in Table 5.

Table 5. Components used when connecting Broadcom 10Gb 4-port Ethernet Expansion Card (CFFh) to four BNT Virtual Fabric 10Gb Switch Modules

Diagram reference	Part number/machine type	Description	Quantity
1	Varies	IBM BladeCenter HS22 or other supported server	1 to 14
2	44W4465	Broadcom 10Gb 4-port Ethernet Expansion Card (CFFh)	1 per server
3	8852 or 8740/8750	BladeCenter H or BladeCenter HT	1
4	46C7191	BNT Virtual Fabric 10Gb Switch Module	4
5	44W4408	IBM 10GBase-SR 10GbE 850 nm Fiber SFP+ Transceiver	Up to 40*

* You must have one transceiver for each 10Gb port in an I/O module.

Operating system support

The Broadcom 10Gb 2-Port and 4-Port Ethernet Expansion Cards (CFFh) support the following operating systems:

- Microsoft Windows Server 2003, Web Edition
- Microsoft Windows Server 2003/2003 R2, Datacenter Edition
- Microsoft Windows Server 2003/2003 R2, Datacenter x64 Edition
- Microsoft Windows Server 2003/2003 R2, Enterprise Edition
- Microsoft Windows Server 2003/2003 R2, Enterprise x64 Edition
- Microsoft Windows Server 2003/2003 R2, Standard Edition
- Microsoft Windows Server 2003/2003 R2, Standard x64 Edition
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2008, Datacenter x64 Edition
- Microsoft Windows Server 2008, Enterprise x64 Edition
- Microsoft Windows Server 2008, Standard x64 Edition
- Microsoft Windows Server 2008, Web x64 Edition
- Red Hat Enterprise Linux 4 AS for AMD64/EM64T
- Red Hat Enterprise Linux 4 AS for x86
- Red Hat Enterprise Linux 4 ES for AMD64/EM64T
- Red Hat Enterprise Linux 4 ES for x86
- Red Hat Enterprise Linux 4 WS/HPC for AMD64/EM64T
- Red Hat Enterprise Linux 4 WS/HPC for x86
- Red Hat Enterprise Linux 5 Server Edition
- Red Hat Enterprise Linux 5 Server Edition with Xen
- Red Hat Enterprise Linux 5 Server with Xen x64 Edition
- Red Hat Enterprise Linux 5 Server x64 Edition
- SUSE LINUX Enterprise Server 10 for AMD64/EM64T
- SUSE LINUX Enterprise Server 10 for x86
- SUSE LINUX Enterprise Server 10 with Xen for AMD64/EM64T
- SUSE LINUX Enterprise Server 10 with Xen for x86
- SUSE LINUX Enterprise Server 11 for AMD64/EM64T
- SUSE LINUX Enterprise Server 11 for x86
- SUSE LINUX Enterprise Server 11 with Xen for AMD64/EM64T
- VMware ESX 3.5
- VMware ESX 4.0
- VMware ESXi 4.0

Support for operating systems is based on the combination of the expansion card and the blade server in which it is installed. See IBM ServerProven for the latest information about the specific versions and service packs supported: http://ibm.com/servers/eserver/serverproven/compat/us/. Select the blade server and then select the expansion card to see the supported operating systems.

Related publications

For more information refer to these documents:

- *Broadcom 10Gb 2-port and 4-port Ethernet Expansion Cards (CFFh) for IBM BladeCenter Installation and User's Guide*
  http://www.ibm.com/support/docview.wss?uid=psg1MIGR-5079889
- Firmware for the Broadcom 10Gb 2-port and 4-port Ethernet Expansion Cards (CFFh)
  http://www.ibm.com/support/docview.wss?uid=psg1MIGR-5078695
- IBM U.S. Announcement Letter for the Broadcom 10Gb 2-Port and 4-Port Ethernet Expansion Cards
  http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS108-718
- IBM BladeCenter Interoperability Guide
  http://www.ibm.com/support/docview.wss?uid=psg1MIGR-5073016
- IBM Redbooks publication *IBM BladeCenter Products and Technology*, SG24-7523
  http://www.redbooks.ibm.com/abstracts/sg247523.html

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